

ROADMAP			
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A. Context, Subsidiarity Check and Objectives

Context
<p>Cooperative Intelligent Transport Systems (Cooperative Systems or C-ITS) make use of information and communication technologies that enable different parts of the road transport network to share information. They allow vehicles to become connected to each other, to road transport infrastructure and to other road users. In addition to what drivers can immediately see around them, and what vehicle sensors can detect, all parts of the transport system will increasingly be able to share information to improve driver decision making and optimise transport operations.</p> <p>C-ITS can cover a very wide range of different services. Depending on the nature of the applications (e.g. information supply, awareness, assistance, warning to avoid an accident, traffic management), C-ITS can contribute to improving road safety by avoiding accidents and reducing their severity, to decreasing congestion, by optimising performance and available capacity of existing road transport infrastructure, to enhancing vehicle fleet management, by increasing travel time reliability and to reducing energy use and negative environmental impact</p> <p>In recognition of the high potential that C-ITS offer, several Commission policy documents have reiterated the need and Commission's support for enhanced deployment of these systems:</p> <ul style="list-style-type: none"> • The 2008 Communication from the Commission “Action Plan for the Deployment of Intelligent Transport Systems in Europe”¹ in its Action Area 4 (Integration of the vehicle into the transport infrastructure) includes a specific EU-level policy action 4.2 related to the “Development and evaluation of cooperative systems in view of the definition of a harmonised approach; assessment of deployment strategies, including investments in intelligent infrastructure” and policy action 4.3 “Definition of specifications for infrastructure-to-infrastructure (I2I), vehicle-to-infrastructure (V2I) and vehicle-to-vehicle (V2V) communication in co-operative systems”. These actions notably address the wider deployment of C-ITS in Europe. • Cooperative Intelligent Transport Systems are a priority under Article 2 (iv) and Annex I (Priority Area IV) of Directive 2010/40/EU² on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport. • The importance of the policy was reiterated in the 2011 White Paper “Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system”³ which, in its initiative 16 requires, by 2020, to “harmonise and deploy road safety technology – such as driver assistance systems, (smart) speed limiters, seat-belt reminders, eCall, cooperative systems and vehicle-infrastructure interfaces”. <p>C-ITS are maturing (the technological capabilities among market parties are increasing, and some vehicle manufacturers had already announced that they will launch series of vehicles with C-ITS technology on board from 2015 onwards) and the best time for co-ordinating their deployment is before</p>

1 COM(2008) 886 final
 2 OJ L 207, p.1.
 3 COM(2011) 144 final

separate/proprietary systems and ecosystems have fully developed. It turned out that starting deployment in the year 2015 has not been reached by industry and Member States due to severe barriers and uncertainties (e.g. lack of agreed security solutions) and Europe seriously lags behind compared to other parts of the world – by now the new target date for start of operation has been updated to 2019, under the assumption that the open issues can be resolved with all the required solutions in place in 2016⁴. Therefore, the European Commission reacted and engaged in a dialogue with Member States and private stakeholders in a dedicated forum to address these open issues. The Platform for the Deployment of C-ITS in the European Union (C-ITS Platform) is a Commission Expert Group and was launched by the Commission in July 2014, and met for the first time in November 2014. The platform provides an operational instrument for a dialogue, exchange of technical knowledge and cooperation, among the Commission, public stakeholders from Member States and local/regional authorities, and private stakeholders such as vehicle manufacturers, service providers, road operators, telecom companies and Tier 1 suppliers (that supply directly to vehicle manufacturers). The aim is to build a shared vision on issues hampering coordinated deployment of C-ITS across the EU and supporting their actual deployment. The C-ITS Platform consists of more than 100 stakeholders that meet on a monthly basis in 11 different Working Groups that have been structured along a dedicated work programme⁵. The first phase of the C-ITS platform resulted in a final report of the experts which has been endorsed consensually in January 2016⁶. In particular, Member States and industry agreed on many concrete outputs – some of them listed below:

- The C-ITS Platform recommends a concrete set of "Day 1 C-ITS Services" that are most promising to be deployed in the short term in vehicles and infrastructure (e.g. road works warning, emergency brake light warning, traffic light information, display of current speed limits, etc.).
- The C-ITS Platform recommends on how privacy and data protection has to be assured if such services are deployed. C-ITS related data is considered personal data, therefore the principle of informed consent of the end-user has been endorsed by the platform.
- An agreement has been reached between all stakeholders that one common security solution ("Trust Model": Certificate Policy and Security Policy for authentic secure communications) for C-ITS communication needs to be implemented all over Europe, as security is a key current obstacle for deployment.
- The C-ITS Platform recommends concrete new standardisation items (e.g. in the field of access-to-in-vehicle-data or security).
- C-ITS compliance assessment process has been designed and recommended by the platform to ensure interoperability e.g. through compliance with standardisation and the common security solutions

C-ITS form an integral part of the **Commission's Energy Union Strategy** by decreasing energy consumption and increasing energy efficiency in road transport with better traffic management and less congestion. It also contributes to the **Commission's Digital Single Market Strategy** as C-ITS can incorporate ICT-solutions in transport and will create massive volumes of electronic data exchanges. Further to that, a G7 declaration on automated and connected driving adopted in September 2015⁷ endorsed the need for initiatives on C-ITS as levels of automation in vehicles increase.

Funding for C-ITS pilot projects has been available under EU funding programmes (TEN-T, CEF – Connected Europa Facility, FP7 and H2020). Some Member States are taking leadership in terms of deployment to answer specific transport needs. Through strategic alliances, such as the Amsterdam Group (alliance between the road authorities CEDR (Conference of European Directors of Roads), ASECAP (European Association of Operators of Toll Road Infrastructures, POLIS (Network of European cities and regions) and Car2Car Communication Consortium), the Netherlands, Germany and Austria are about to start large scale testing in real life conditions on selected motorway corridors in Europe. The Commission is supporting large scale testing in France through the TEN-T funding programme, in Finland and Sweden through the 2014 Connecting Europe Facility and beyond through the upcoming 2015 CEF call. Other Member States that are envisaging starting large scale testing include notably the UK, Belgium, Hungary, Slovenia and the Czech Republic.

Since there has been no legislation or specific policy in this area before, no ex-post analysis is available. However a progress report on the ITS Action Plan as well as a report on the implementation of the ITS Directive have been published⁸, which highlight that the real bottleneck of C-ITS seems to be in deployment

⁴ Car2Car Communication Consortium Press Release 10/2015: <https://www.car-2-car.org/index.php?id=214>

⁵ http://ec.europa.eu/transport/themes/its/news/c-its-deployment-platform_en.htm

⁶ http://ec.europa.eu/transport/themes/its/c-its_en.htm

⁷ <http://www.bmvi.de/SharedDocs/EN/Artikel/K/G7/g7-dokumente.html>

⁸ COM(2014) 642 final and SWD(2014) 320 final.

and that a shared vision of all relevant stakeholders on the deployment of these systems, concerted action and synchronisation of investments is required.

Issue

This initiative is expected to address the following main issues:

- currently C-ITS are developed in a fragmented way across Member States and industries, resulting in interoperability issues hindering continuity of services
- the deployment and market uptake of C-ITS is slow and full benefits of C-ITS (e.g. efficiency gains in the transport system) are not realized
- the competitiveness of the European industry is endangered.

These problems are triggered by the five following important drivers:

1. Gaps and inconsistencies in the applicable regulatory and policy environments

Until recently the main C-ITS activities have been focussed on research and innovation in an attempt to support technological development. This has happened both at industry, Member States and EU level, the latter through activities funded under the TEN-T and R&D Frameworks and more recently through CEF and Horizon 2020.

Based on these pilot projects, some Member States are currently further developing own national solutions which risks leading to inconsistency in the applicable regulatory frameworks, in particular on sensitive issues such as liability, security, privacy, data protection and frequencies if not properly coordinated. This uncertainty is pre-empting large-scale investments from the private and public sector to reach large scale deployment of C-ITS services to achieve the full benefits.

2. Limited coordination between stakeholders in the value chain

Currently there is limited coordination between the different stakeholders in the value chain. Some players have already developed proprietary technological solutions and established market positions, but these are often developed in a silo-like way, leading to fragmented and potentially incompatible solutions, which can hamper continuity and integration of services, in particular between technological ecosystems and across geographical borders. Introducing interoperability afterwards in already operational systems often proves to be very difficult and costly (for instance in the tolling sector).

C-ITS can contribute to a variety of purposes and are an effective tool to reduce the impact of well-known negative transport externalities, such as fatalities and injuries, costs linked to congestion or costs linked to energy consumption. However, the market is expected to focus in the first place on commercial services, e.g. entertainment / infotainment services. Therefore, a risk exists that additional societal benefits that these new vehicle/infrastructure technologies could bring will not be realized, if coordination among the stakeholders is lacking at European level.

3. Current C-ITS deployment faces high costs and investment risks

C-ITS deployment poses high costs and investment risks because economies of scale are not yet available. Also deployment benefits are limited due to lack of network effects. This poses a "chicken and egg" problem: should one invest first and wait for the benefits or wait for economies of scale before investing? Robust business cases are so far lacking, but sufficient penetration rates and scalability will have to be achieved to ensure the full benefits of C-ITS.

4. Accessibility of data is insufficient

C-ITS can potentially contribute to the whole transport sector becoming a co-operative, digital, interconnected eco-system, providing data and services that reflect the needs of the customers. However, currently the data needed for and/or generated by C-ITS is not accessible in a fair, reasonable and non-discriminatory way for all relevant stakeholders. This limits the development and deployment of services and causes duplication of data collection efforts.

5. EU C-ITS deployment is lagging international competitors

Looking beyond the European borders, Japan⁹ and US¹⁰ are far ahead compared to EU with clear deployment strategies established or about to be established through legislation. Japan has already

⁹ In Japan, the nationwide implementation of Cooperative Systems commenced in 2011 with three Day 1 services: Dynamic Route Guidance, Safety Driving Support and Electronic Toll Collection. Japan has a national strategy with clearly defined goals and milestones, and it is following a building block approach on existing platforms for already deployed services (e.g.: digital map database for car navigation systems; traffic information system for Vehicle Information & Communication Systems (VICS) or security management system for ETC transaction.

deployed the first services in real life environment in October 2015. Lacking a comparable deployment strategy in Europe could seriously endanger the competitiveness of the European industry.

These issues affect key stakeholders which include amongst others vehicle manufacturers, tier one suppliers (that supply directly to vehicle manufactures), service providers, the telecom industry, aftermarket, road operators as well as public authorities (Member States, local authorities).

Transnational aspects such as EU-wide interoperability and seamless cross-border deployment are an essential requirement for the deployment and operation of continuous and harmonised C-ITS services across the EU that cannot be satisfactorily achieved by individual Member States or the industry. As a result, the Member States and different stakeholders have been calling on the Commission to address the situation.

Without a common vision developed together with Member States and private stakeholders, the market risks become further fragmented and interoperability would be at risk.

Subsidiarity check

The interoperability and continuity of C-ITS have a clear cross-border dimension and thus coordination and action is justified on the grounds of subsidiarity as provided for in Article 91 TFEU. Action at Union level would establish a clear roadmap for the deployment of C-ITS across Europe. Setting out a clear and stable roadmap will give greater certainty of investment, is expected to trigger the necessary economies of scale and ensure EU-wide interoperability and continuity of services.

The C-ITS Master Plan will be only a first non-legislative step, the direct impacts of which are expected to be rather limited, compared to legislative measures.

Main policy objectives

The general objective of the C-ITS Master Plan is to increase the competitiveness of EU industry and enhancing the performance of the transport system, by supporting and promoting seamless C-ITS development in Europe. Setting out a roadmap for further actions will give greater certainty to ensure synchronised investments and is expected to trigger the necessary economies of scale while ensuring EU-wide interoperability and continuity of services. The C-ITS Masterplan will form the first milestone towards interoperable cooperative, connected and automated vehicles in Europe.

The specific objectives of the initiative are to:

- Increasing the continuity and interoperability of C-ITS, through a more coordinated development and deployment across Member States and industries.
- Increase the rate of deployment and market uptake of C-ITS to realise the full benefits of C-ITS.
- Improve the use and accessibility of data and information in the transport sector

B. Option Mapping

The first step to stimulating EU-wide interoperability and continuity of C-ITS services, is to provide a comprehensive overview of the sector's current situation and appraise possible pathways and instruments to address the problem drivers in order to make deployment happen in a coordinated way in the EU. Effective and complementary approaches at EU, national and/or stakeholder level should be identified.

The C-ITS platform agreed on a shared view on multiple topics such as 1) identification of most promising C-ITS services in Europe for early deployment, for both vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) services and in different geographical environments (long distance corridors, secondary roads and the urban environment) 2) ways to address a feasible and interoperable C-ITS security framework for Europe, 3) C-ITS data protection & privacy issues, 4) possible enabling conditions for fair access to in-vehicle data, 5) potential impacts in terms of liability, 6) road safety related issues, 7) requirements for standardisation, 8) implementation & other technical issues (e.g. to avoid interference of frequencies), 9) means to promote public acceptance.

¹⁰ In the US, the focus has been put on the benefits of Cooperative Systems in terms of road safety, hence, the push for V2V (vehicle-to-vehicle) communications over V2I. In this respect, NHTSA (National Highway Traffic Safety Administration) has announced its intention of introducing mandatory DSRC (Dedicated Short Range Communication) in light vehicles as of 2016. In parallel to this emphasis on road safety V2V applications, the US federal government will support pilot projects on V2I (vehicle-to-infrastructure) through a grant scheme from 2015 onwards. This shows the recognition that, besides V2V, the US government also considers V2I applications important in the earlier stages of C-ITS deployment.

The Master Plan will reflect the outcome of this dialogue and outline a strategy for the deployment of interoperable C-ITS in the EU in the form of a Commission Communication. Specifically it will:

- Make visible/disseminate the outcomes of the work of the C-ITS platform
- Set out recommendations and areas for further work in order to close the gaps in policy environments while setting a vision and policy direction at EU level to stimulate EU-wide interoperability and continuity of C-ITS services
- Set out potential actions to speed up implementation and to reduce investment risks for C-ITS

While in some areas there might be concrete guidance and recommendations, others will primarily map and indicate possible policy directions and elements for future initiatives. This will help member states and industry to coherently deploy interoperable C-ITS services in Europe in order to increase safety, efficiency and to mitigate the negative environmental effects of transport.

Alternatively, setting the framework could be left up to individual member states and the industry (i.e. without additional EU-level action), however without a common vision developed together with Member States and private stakeholders, the market risks become further fragmented and interoperability would be at risk.

Proportionality check

Transnational aspects such as EU-wide interoperability and cross-border deployment are an essential requirement for the deployment and operation of continuous and harmonised C-ITS services across the EU that cannot be satisfactorily achieved by individual Member States. A Commission Communication will establish a clear roadmap for the deployment of C-ITS across Europe. Setting out a comprehensive and stable roadmap will give greater certainty of investment, is expected to trigger the necessary economies of scale and ensure EU-wide interoperability and continuity of services.

C. Data collection and Better Regulation instruments

Data collection

Since the sector is only just maturing, there are no large sets of data available regarding C-ITS. Hence, the information available mostly comes from projects carried out at European and/or national levels, as well as other national reports.

During the period November 2014 – January 2016, the C-ITS Platform has produced a large set of valuable reports¹¹ and other outcomes in the context of the different Working Groups, which are essential for the development of the Master Plan. In parallel, an external supporting study on cost-benefit for C-ITS Deployment in the EU has been carried out¹², that fed into the platform's work.

Relevant materials have been gathered under FP7 and Horizon 2020 projects. This includes studies, modelling and reports prepared under national ITS strategies by Member States as well as materials, such as market analysis and reports from a wide range of EU associations and stakeholders in the C-ITS sector. Publications by National Authorities of non-European countries, such as the US, Australia or Japan, and international organisations also form part of the evidence base, as well as publications, studies from academia and consultancies.

Consultation approach

The main dedicated tool for consultation is the **C-ITS Platform**, which includes all the relevant actors along the whole value chain including public authorities at national and local level. Public consultation started with the Commission's ITS Conference in December 2013 with dedicated sessions and workshops on the topic of C-ITS. Further in April 2015 the Commission's ITS Conference had a dedicated consultation session on the topic of C-ITS.

The bodies established under the ITS Directive 2010/40/EU¹³, namely the **ITS Committee** representing the Member States, as well as the **ITS Advisory Group** representing the industry are also being involved. The most recent consultation took place at the last meetings of these groups in July 2015.

An **open 12-week public consultation** will be launched in March 2016. The consultation aims to collect

¹¹ All reports available at: http://ec.europa.eu/transport/themes/its/c-its_en.htm

¹² will be published soon at http://ec.europa.eu/transport/themes/its/studies/its_en.htm

¹³ http://ec.europa.eu/transport/themes/its/road/action_plan/

the opinions of stakeholders and interested parties including EU citizens and private and public organisations on the topics introduced in the C-ITS Platform. The consultation will be accessible via [YourVoiceInEurope](#) and the [DG MOVE website](#) and available in the following languages: EN. Answers can be provided in any of the 24 official EU languages.

A report summarising the results of all consultation activities will be published on the consultation web page shortly after the last consultation activity is completed.

Will an Implementation plan be established?

No implementation plan will be established, as it concerns a non-legislative act

Will an impact assessment be carried out for this initiative and/or possible follow-up initiatives?

In the course of the C-ITS Platform a cost benefit analysis¹⁴ of C-ITS services in different deployment scenarios has been conducted. The results of the study clearly show that the full potential of C-ITS will be tapped if deployment happens quickly throughout all the different vehicle fleets and types of infrastructure. Further the study stresses that interoperability is needed in Europe right from the start of deployment. However, measures such as mandatory deployment scenarios to support early take-up were not assessed in this study.

The C-ITS Masterplan will not announce the mandatory deployment of any particular scenario, but look at the enabling conditions to support a coordinated and interoperable deployment throughout the EU. The Communication will not propose any new legislative measures, but will identify and clarify possible pathways. Therefore no impact assessment will be carried out.

Any potential follow-up initiatives from the C-ITS Master Plan will be accompanied by Impact Assessments when appropriate. Should there for instance be a need in the future for legislative measures, as foreseen under the ITS directive 2010/40/EU, any specifications in the form of delegated acts regarding interoperability will be accompanied by a cost benefit analysis and any mandatory deployment will be accompanied by an impact assessment.

¹⁴ will be published soon at http://ec.europa.eu/transport/themes/its/studies/its_en.htm